

Internation No PCT/EP 03/12334

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A44C17/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\begin{array}{ll} \mbox{Minimum documentation searched (classification system followed by classification symbols)} \\ \mbox{IPC 7} & \mbox{A44C} & \mbox{B23K} \end{array}$

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data

C.	DOCUME	nts consider	IED TO BE I	RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Х	US 5 637 244 A (EROKHIN ALEXANDER I) 10 June 1997 (1997-06-10) column 4, line 56 - column 5, line 25; claim 1; figures 1,3	1,3-9
х	US 2002/018255 A1 (KIHARA NOBUHIRO) 14 February 2002 (2002-02-14) paragraphs '0007! - '0010!; figures 1,2	2
X	US 5 190 024 A (SENANAYAKE DAYA R) 2 March 1993 (1993-03-02) column 5, line 6 - line 25	11-13
Х	US 5 454 234 A (KARMELI DAVID D) 3 October 1995 (1995-10-03) column 2, line 3 - line 50; figures la,lb	11-13
		,

X Further documents are listed in the continuation of box C.	Patent family members are listed in annex.
Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filling date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the Invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report
2 July 2004	13/07/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk	Authorized officer
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Horubala, T



Interior nal Application No
PCT/EP 03/12334

C.(Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT			
Category °		Relevant to daim No.		
X	US 5 072 549 A (JOHNSTON HAROLD) 17 December 1991 (1991-12-17) column 1, line 23 - line 43 column 2, line 13 - line 62	11-13		
A	US 6 330 523 B1 (DIMSDALE JERRY ET AL) 11 December 2001 (2001-12-11) column 8, line 7 - column 9, line 17; figures 1,2,1a	11-13		
A	US 5 552 992 A (HUNTER CHARLES R) 3 September 1996 (1996-09-03) the whole document	1		

INTERNATIONAL SEARCH REPORT

Information on patent family members

Interi Jona	Application No
	03/12334

	itent document I in search report		Publication date		Patent family member(s)		Publication date
IIS	5637244	A	10-06-1997	EP	0624421	A2	17-11-1994
•			20 00 200	JP	7136782		30-05-1995
US	2002018255	A1	14-02-2002	JP	2001350395	A	21-12-2001
US	5190024	Α	02-03-1993	AU	630124		22-10-1992
				AU	4484189		12-06-1990
				CN	1042685		06-06-1990
				EP	0561770		29-09-1993
				IN	174710		18-02-1995
				JP	4501685		26-03-1992
				WO	9005624		31-05-1990
				ZA	8908713	A	26-09-1990
US	5454234	Α	03-10-1995	NONE			
US	5072549	Α	17-12-1991	NONE			
US	6330523	B1	11-12-2001	US	5988862	Α	23-11-1999
				US	2002059042	A1	16-05-2002
			,	EP	0895577	A2	10-02-1999
				JP	2000509150	T	18-07-2000
				US		A1	02-01-2003
				US	2002158870		31-10-2002
				US	2002149585	A1	17-10-2002
				US	2002145607		10-10-2002
				US	6473079	B1	29-10-2002
				US	6246468		12-06-2001
				US	6420698		16-07-2002
				US	2004051711		18-03-2004
				CA	2252409		30-10-1997
				WO	9740342	AZ 	30-10-1997
			03-09-1996	AU	3950395	Δ	23-05-1996
US	5552992	Α	03-09-1990	MO	9613787		09-05-1996